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ABSTRACT

This paper begins with a discussion of information management as it pertains to the four operations of automated library systems (i.e., acquisitions, cataloging, circulation, and reference). Library staff reactions to library automation change are summarized, including uncertainty, cynicism, and resignation or hope. Common pitfalls that interfere with the change process are then described, including: poor communication between management, staff, and change agents; unanticipated technical problems; fear of the unknown, uncertainty, and task enlargement or reduction; failure of the new system to meet stated management objectives; and management's failure to understand, anticipate, and prepare for resistance. The following strategies for managing change are offered: (1) understand the objectives of the proposed change; (2) identify and communicate the deficiencies of the existing system; (3) demonstrate how the change will improve the quality of the work performed and/or increase staff efficiency; (4) establish and maintain open channels for communication among mangers, consultants, vendors, systems installation personnel, and staff; (5) encourage and use employee participation; and (6) commit the resources of the library to the change, specifically in the areas of recruitment, training, compensation, and ergonomics. (MES)

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STRATEGIES FOR WORKING WITH LIBRARY STAFF MEMBERS IN EMBRACING CHANGE CAUSED BY LIBRARY AUTOMATION

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This paper assumes that the academic library world is in a state of profound and continuous change. The reasons can be summed up in the phrase – the convergence of information technology and communications. The purpose of this paper is to share with you some personal observations on some common "pitfalls" that we library managers make as change agents. I will then offer some simple strategies for working with library staff members in embracing change caused by library automation.

Library Automation has two major objectives:

1. To improve access to information,
2. To decrease, or at least not increase cost, by transferring low-level, repetitive operations to a machine.

For the purpose of this discussion, library systems include these operations:

1. Acquisitions: identifying, ordering, receiving and paying for library materials,
2. Cataloguing: arranging like materials together by subject and providing access to them by indexes: author, title, subject, etc.,
3. Circulation: making materials available to users by lending,
4. Reference or information service.

One may automate all or any part of these operations. The four operations of acquisitions, cataloguing (bibliographic data management), circulation, and reference fall into two basic categories: information management and information retrieval.

Information management

The materials acquisitions function involves creating an order for an item, say, for example a book; thus eliminating the multiple-part paper filing operation for each book. The computer is able to perform more efficiently large numbers of clerical operations in the order process. The cataloguing process was one of the first beneficiaries of automation. Off line batch bibliographic searching and computer produced microfilm catalogues and indexes to bibliographic data have been available for several decades. The real advantage to cataloguing departments has been realised more recently however, through "file transfer" whereby entire files of information are moved between computer systems by telecommunications. File Transfer has significant implications for libraries. Participants in File Transfer projects have demonstrated the feasibility of intercommunication standards to support the electronic interchange of bibliographic records. The protocol based on the Open System Interconnection (OSI) reference model, enables libraries to search and transfer catalogue records by means of connection oriented, computer-to-computer links. This can occur despite the fact that institutions operate different makes of computers. The file transfer protocol considerably reduces both the amount of data entry required to create a local cataloguing record and the turnaround time needed to obtain source records. The time required for obtaining source records has been reduced from weeks to hours. To accommodate this quick turnaround, changes had to be made in Waterloo's Cataloguing Department workflow. This was obviously a change from more traditional cataloguing practices. These changes were not introduced without planning.

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The card catalogue, first introduced over a hundred years ago, was a remarkable information storage and retrieval device. It provided random access to massive quantities of data. However, it was expensive to maintain, and unresponsive to users changing needs. Users now have access to data on a library's collection from computer terminals located in the library, at home or in their offices, anytime. Microcomputer owners with a modem are able to access the catalogues not only of their local libraries but also the collective catalogues of major libraries elsewhere. One can find out whether a local library holds a book, and if it is in; if it is not, a 'hold' can be placed, and in certain circumstances it can be delivered to the user. If the local library does not hold the item, distant catalogues may be searched and the inter-library loan systems will allow one to order the book to be sent to his local library. The user interacts with the computer to obtain necessary information. It is this interaction between the user and the computer system that really sets apart the online catalogue from other forms of catalogues (book, card, etc.). Using the capabilities of the computer, the user is able to retrieve and manipulate large amounts of information. A well-designed online catalogue can even provide assistance in case a user encounters a problem or desires an explanation. The Online Catalogue has made this change possible. These changes have a profound effect on library staff. Conversion to the online catalogue provides unprecedented convenience, efficiency and effectiveness to library users.

Having found the book through the catalogue, the third automated function is called into action when the user borrows a book from the Library through the automated online circulation system. To "sign out" a book one passes a light pen over the user's card and over the bar code label in the book. The system then combines the two pieces of information and stores it until the book is returned when the book bar code is "wanded" again and the book is discharged and returned to the stacks for the next borrower. No paper is created or filed. The computer prepares all user statistics and overdue notices.

The fourth function of library automation is reference or information retrieval. As well as information retrieval from the online catalogue there is the capability of retrieving information from other data banks and web sites through computerised literature searches quickly, online, by search terms or subject headings. Such service covers the broad subject fields of science, technology, medicine, social sciences and business/economics. Through plain language search terms one may access information in such fugitive literature as technical reports and conference proceedings as well as the periodical literature. Hours of searching through paper indexes can be reduced to a few minutes of computer searching. These automated applications have changed the nature and scope of library work. The introduction of the WorldWideWeb has accelerated the enormous changes that are occurring in academic libraries today.

A 'library system," whether or not it is automated is an organised set of activities, tasks or operations performed on information or operations to achieve a specified result. In a manual library system people required process operations. If a computer performs some of the work, a computer based library system results. In today's automated library systems, computers assist people. Librarians and library staff are capable of achieving more, less expensively, more accurately and more rapidly than by manual methods.

Automation has implications for the management and development of library human resources, and it is these implications and the question of managing change in general that I should like to focus on. As library managers, we cannot ignore the interrelationship between implicit human values and automation. The introduction of computer library systems causes change: technological, organisational and most importantly, social. The introduction of technology to library services causes the relationships between library staff and their work to change.

Traditional technology, for example, the typewriter and the photocopier, extends the power of human muscles and senses. Contemporary communications and computing technologies, particularly when they are combined more closely resemble an extension of the human nervous system. Their influences are more profound and unpredictable.

The challenge to supervisors and managers is not to master the functional details of automation. The proof of our ability to manage will be to design appropriate organisational structures to operate effectively when automated systems are introduced. The social and organisational considerations are far more important than the technical ones. Experience has taught that there will be resistance to change.

We cannot ignore this resistance or treat it as a problem separate from the introduction of change. It is *part* of the change process; it must be anticipated and planned for.

The causes for resistance are rarely obvious, even sometimes to those who are doing the resisting. Let me suggest a few: There is **uncertainty**, usually because managers did not make clear the purpose of the program. You might hear something like, "I hear that we are being replaced by machines". Then there is **cynicism**, "or this will never work." This can be a self-fulfilling prophecy which, if we let it, and can lead to "I told you it wouldn't work". And there is either **resignation or hope**, "I give in" or "This isn't so bad after all". The simplest and quickest way to get to this stage is through consultation and communication. I believe that people who are consulted from the very beginning, participate in the processes and understand the reasons for change, are more likely to accept the change than those who have change dumped on them.

Let us list some of the **common pitfalls** that interfere with the change process.

1. Poor communication between management, staff and the change agents
Without careful explanation staff may misinterpret the reasons for the introduction of a new system and improperly evaluate its benefits. Poor communication will turn people off, cause worry, and convert potential advocates into opponents.

2. Unanticipated technical problems associated with the change
Technical problems can arise if there are no manuals, if forms are badly designed or if the systems software still has 'bugs' in it. Even if we provide all of these things, technical problems can still arise.

3. Fear of the unknown, uncertainty, task enlargement or reduction
The introduction of a new system often demands a redefinition of duties and responsibilities. Departmental relations may change. Personal and procedural interdependencies must be considered in systems design. Fear of personal failure resulting from a perceived inability to cope with the intricacies of new procedures can contribute to a climate of resistance. Most people really do enjoy their work. Often the purpose of an activity is of less interest to the person performing it than is the ritual of its performance. If the work to be done is "de-skilled" by the computer or does not provide for the exercise of individual judgement, people will create the opportunity to use their judgement in an operation even when it is not required.
Supervisors and middle managers are typically the most neglected group in the change process. The question uppermost in their minds is "what happens to my job when the people I supervise are using new technology." Human relations may deteriorate and the change may contribute to an environment of hostility, increased absenteeism, and failures to meet deadlines and staff complaints about the quality of the air, washrooms, staff lounge, cafeteria, parking, etc. Those elements from which staff derive satisfaction should be preserved, whenever possible. If they are not, people will reject a task that causes stress. People may develop hostility towards themselves or others leading to confrontation with supervisors, peers and subordinates. This can lead to a deterioration of interpersonal relationships, morale and service.

4. The failure of the new system to meet stated **management objectives** such as improved job satisfaction or efficiency Staff may identify inadequacies in the new system before management does and reject it because it does not serve the organisation's stated objectives. Management is receiving a strong signal in this case that the new system should be reviewed. If the signal is unacknowledged, staff may change their internal motivational aspirations and attitudes. A manager at Waterloo recently asked about a new system being introduced campus-wide, "When will we have a system that works for us instead of getting to systems to work for?"

5. Finally, management's **failure to understand, anticipate and prepare for resistance**
Time and training must be committed. Communication takes time. Management can contribute to the failure of a new system by not providing appropriate support through such things as training, compensation, equipment and furnishings. Resistance to change must be addressed by focusing on the sources of the problem rather than the symptoms. Dealing directly with, hostility, production bottlenecks, or data entry errors will have no permanent, desirable effects. Managers will have greater

success if they have in place specific strategies for managing change.

Some of these strategies for managing change are:

1. Understand the objectives of the proposed change.
Gather all the necessary information associated with the change and understand the problem being addressed. Reduce it to the basic principle: to automate is not an objective; to give better service is.

2. Identify and communicate the deficiencies of the existing system.
Problem identification and thoughtful consideration of solution alternatives are prerequisites to successful change. For example, the necessity for change might be promoted by asking staff to review and analyse current practice. In the classical systems analysis procedure one would:

- Analyse current operations
- Describe the ideal
- Evaluate current practice
- Develop plan for change

Do not define the 'problem' in terms of the preferred solution. A review and analysis develops a perceived need for change. This need is reinforced by discussions showing how the new system will solve problems.

3. Demonstrate how the change will improve the quality of the work performed and/or increase staff efficiency.
Work may become rewarding by simplifying or eliminating tedious tasks. The new system may eliminate bottlenecks. It may provide more relevant and timely information leading to improved performance and service. We are trying to communicate change in a way that staff will see it as a positive thing for both the library and themselves. There is a flaw in this reasoning of course; many staff will see this quest for work-place efficiency as leading to job loss. We must have this discussion in the open.
The change effort should be perceived as being as staff-motivated and as voluntary as possible. If this is ignored a variety of problems can be expected regardless of the technical soundness of the change. It is not possible to predict the complex and subtle consequences of even the simplest changes. It is essential that we enlist the problem solving ability of those directly affected by the new system.

4. Establish and maintain open channels of communication among managers, consultants, vendors, systems installation personnel and staff. This is time consuming and a common mistake that managers make, is to move too quickly and involve too few people. Adequate time must be allowed for the transition process. Communication should include the clear articulation of management's objectives and commitment to the project. To communicate effectively we must not only convey information clearly and honestly. We also must listen well and respond sensitively to matters of concern. Participation and support are part of the communications process.

5. Encourage and use employee participation in all phases of the change process. Managers need to ensure that employees not only understand the scope and technical details of their new tasks. They must also perceive their new duties, status and relationships as being at least equivalent to those which existed under the old system. It might be desirable for some time to operate the new system in tandem with the old system. A selected group may begin operating the new system under close supervision of the systems technicians and managers. As this group gains competence and confidence, they can gradually engage the services of other employees and eventually phase out the old system. In addition, training manuals, programs, user manuals, and observations of similar systems in other libraries will prove useful in successful change. Accurate and complete information will help reduce much of the anxiety associated with change.

6. Commit the resources of the library to the change; provide staff with a supportive environment and promote the change at all levels. The issues of recruitment, training, compensation and ergonomics are significant.

a) Beginning with recruitment, there will continue to be a growing emphasis on the importance of qualifications that will include familiarity with current technology, and a willingness to work in rapidly changing and highly automated environments. Basic requirements for entry-level jobs reflect the needs of an automated environment. So too, do the criteria for promotion.

b) Technological developments also affect existing workloads and staffing requirements, and place greater demands on the knowledge and skills of staff, giving rise to increased training needs. Large numbers of staff require training and re-training, specifically, to teach procedures and generally to enable them to understand and feel comfortable in an automated environment at various stages in their careers. New or reallocated resources will be required for job-related training, staff development and continuing education in order:

- to establish a basic understanding among all staff of issues in the advancement of technology, and especially to increase their knowledge of computer technology;
- to increase the confidence and competence of staff whose jobs are directly affected by technological developments
- to explore new ways in which technology might be made to improve staff efficiency and effectiveness,
- to restructure and redesign jobs and to improve management decisions.

c) Uppermost among our responsibilities as managers is to foster and nurture an environment in which well-trained and willing staff are motivated to participate in the library's development; an environment in which their commitment is acknowledged by an appropriate reward system. Many of us are frustrated by circumstances where financial reward is limited by an organisational salary administration program which, in turn, is limited by governmental funding. However, of equal importance to strictly monetary considerations are those of career development possibilities. The availability of career paths to provide opportunities for mobility and advancement within the organisation is also important to staff.

d) Among the questions that technological advances raise are those described as "ergonomic": questions having to do with the biological, medical, psychological interface between people and machines. Automation must be attended by a continuing organisational commitment to the health and safety of staff. Existing facilities and equipment must often be modified and the design of additional facilities undertaken from a somewhat different perspective. Ensuring a safe and ergonomically sound working environment must be a continuing organisational, departmental and individual priority.

Summary

We must apply these strategies for managing change in an open, supportive environment where implementation is enthusiastically promoted at all levels. The environment into which we introduce automated systems is as important as the mechanical and technical details. The effectiveness of automated library systems will be determined by the degree to which those who must interact with them accept them. We must obtain the active and enthusiastic participation in the planning and implementation, of those people who will be most affected by the resulting change, is paramount.

Education and orientation are important factors in implementing automation. All staff from professionals through support staff, and most importantly, front line public services staff, must trained in basic computer technology. They must know what a system can and cannot do, and how to deal with its limitations. A basic understanding and a little practical knowledge of how a computer works goes a long way to dispel the notion that a computer is an intelligent, cognitive machine.

Computers do not do anything that people have not programmed them to do. People control computers; people can override computers; people can pull the plug on computers; people can personalise and individualise a system. People can also discredit a system by giving up the power of control over the computer and in blaming the computer for not being flexible enough. Systems must be designed with as much flexibility as possible. It must also be possible to override a system to make exceptions through human intervention. Flexible systems may cost more, but inflexible systems cannot handle the individual requests that are a large part of library service. Greater flexibility can be built into a library

system and enhance the function of a library. Developers of a library system control that flexibility through commitment, planning and education.

Anticipating and responding to technological change often leads to functional reorganisation and the possible reallocation of human resources. Such reorganisations, where necessary, must be thoughtfully planned and carefully implemented to recognise and respect human values while supporting the goals of the library.

There are complex sets of interpersonal relationships affected by a systems change. The people responsible for making the change must be sensitive to these relationships. As library managers, we have a vital role to play in piloting our organisations through the stress of complex change.

There are two ways to bring in technology: short/long and long/short -- both take the same time – second is more fun!

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